

(c) Heads scattered and peduncled: involucre copiously arachnoid.—Typical specimens. MAINE: Fort Fairfield, August 9, 1909 (*Fernald & Wiegand*); Dover, September 1, 1894 and August 28, 1896 (*Fernald*); North Berwick, September 5, 1894 (*J. C. Parlin*). MASSACHUSETTS, Stockbridge, August 23, 1902 (*R. Hoffmann*).

4. A. MINUS (Hill) Bernh. Syst. Verz. Erfurt. 154 (1800). *Lappa minor* Hill, Veg. Syst. iv. 28 (1762). *A. Lappa*, var. *minus* Gray, Syn. Fl. i. pt. 2, 397 (1878). Typical specimens. MAINE: Houlton, August 12, 1909 (*Fernald & Wiegand*); Rumford, 1887 (*J. C. Parlin*); Hanover, September 10, 1889 (*J. C. Parlin*); East Auburn, August 27, 1896 (*E. D. Merrill*, no. 556); North Berwick, August 31, 1894 (*J. C. Parlin*). NEW HAMPSHIRE: Walpole, August 4, 1900 (*Fernald*, no. 377); VERMONT: Manchester, July 12, 1898 (*M. A. Day*, no. 104). MASSACHUSETTS: Malden, August 8, 1886 (*F. S. Collins*); Cambridge, August 30, 1908 (*C. A. Weatherby*, no. 2); Oak Island, Revere, August 20, 1882 (*H. A. Young*); Boston, August 17, 1866 (*Wm. Boott*); Blue Hills, September 1, 1895 (*W. H. Manning*). ONTARIO: Ottawa, August 4, 1894 (*J. Macoun*).

NOTES ON PELTANDRA, RAFINESQUE.

IVAR TIDESTROM.

(Plate 83.)

During the season of 1904, while searching for aquatic and marsh plants at Cameron Run, near Alexandria, Virginia, I noticed a number of *Peltandrae* in the marsh adjoining the creek. There appeared to be two distinct forms and I naturally supposed the second form to be *P. sagittifolia*, but upon examination the dark green seed disproved my supposition. The difference between the two forms was very marked: the one was robust having ample leaves and a rather large head of fruit, while the other was slender, its leaves narrow-oblong and its head of fruit much smaller. It is true that the leaf-form in many if not in all of our *Araceae*, is very variable, and that even on a single plant we may find leaf-outlines ranging between the maximum and the minimum for that species; yet in the case of our *Peltandrae* there are characters upon which we may possibly recognize two or three long since forgotten forms.

The genus, as diagnosed by Rafinesque (in *Journ. de Physique* **89**: 103, 1819), included three species (?) known to him, as the following sentence in the above cited publication would indicate:—"Les *Calladium sagittaefolium* et *C. virginicum* se rapportent à ce genre; mais je le base sur une nouvelle espèce *P. undulata*." In his "*New Flora of North America*" (1836), Rafinesque redefines his genus, giving a number of generic synonyms: he enumerates and describes eight species giving synonyms in all but two instances: he attributes four species to the North and the remaining ones to the South Atlantic States. As our field study has been limited to Maryland and Virginia, we shall only deal with forms collected within the above named States.

PELTANDRA VIRGINICA (L.) Kunth. Rafinesque (l. c.) appears to have been in doubt about the identity of this species for he reverses his opinion about *P. undulata* and brings in *Arum virginicum* L. as a synonym. The history of the latter is very interesting. There is little room for doubt but that Banister knew this species,—so common in all our marshes and along our river banks. Plukenet has the following note under his *Arum minus Sagittariae foliis ex Insula Barbados [Xanthosoma sagittaefolium (L.) Schott]* :—"Fortè etiā Arum aquaticum Virginianum"....*Banisteri Cat. Virg. de hujus radice Tockawaugh apud Ogilveum dicta, & aliis Tockahoe, panem conficiunt Indigenae Virginianenses, sicut olim Aegypti fecerunt de sua Colocasiae radice."*

(Pluk. Alm. Bot. 51. 1696). The reference to the vernacular name Tockahoe is extremely interesting since this name is still applied to *Peltandra virginica* in Maryland and Virginia. I have heard it applied to our plant in the region along the Patuxent River and between Alexandria and Fredericksburg.

Morison (*Plant. Hist.* **3**: 545. 1698) notes some characters which indicate that he had the true *Arum virginicum*:—"Arum aquaticum foliis in acumen desinentibus, fructu viridi, Plantam hanc Virginiae alumnam nobiscum communicavit D. Jo. Banister. Radix arundinacea & geniculata, folia è rotunda basi, in acutum mucronem desinentia emittit; fructusque virides. An vero in rubedinem prae maturitate transmutentur necne, parum est nobis compertum."

Linnaeus (*Hort. Cliff.* 435, 1737.) supplements his brief description with this note:—"Foliorum longitudo semipedis, petiolorum vero pedalis; angulis obtusis a specie 2^{da} [*Arum maculatum* L.] differt, foliisque magis oblongis; petioli nigro-purpurascentes sunt, ut & margo foliorum, quod in hac speciale est." By examining typical

specimens of *Arum maculatum*, which species Linnaeus uses for comparison, we might suppose that a narrow-leaved form was at hand since the leaves of the latter species are rather narrow and the term *oblongus* as used by Linnaeus and illustrated by him in *Philosophia Botanica* implies an outline (nearly) elliptical in which the relation of the major axis to the minor is nearly three to one. Knowing the intimate fellowship that existed between Gronovius and Linnaeus that the former helped the latter in polishing up the descriptions, while the masterly hand of Linnaeus is clearly seen in the descriptions themselves, we must take account of the description in *Flora Virginica* as forming part of the concept of the species as held by Linnaeus. The descriptions in *Flora Virginica* and *Species Plantarum* appear to embrace a broad-leaved form,—undoubtedly the typical plant of our region.

Richard, the anonymous author of Michaux's Flora (2: 187. 1803) makes the following observation with regard to his *Calla virginica* (*Arum virginicum* L.) "Variat foliis angusto-oblongis," which proves that at that time the typical form of the species was held to be a broad-leaved one. This view is supported by Hooker (Exot. Fl. t. 182, 1827) in his description of *Caladium virginicum* (*Arum virginicum* L., *Calla virginica* Michx.). He states also:—"This plant appears to have been known in our gardens for nearly half a century; yet no figure, as far as I know, has yet been published of it." His illustration of the plant (l. c.) is an excellent one.

Peltandra virginica* var. *heterophylla (Raf.) comb. nov. *P. heterophylla* Raf.—To this species of Rafinesque I would refer without hesitation the narrow-leaved form collected by Dr. Greene at Marshall Hall, Md., in 1897, and by the writer in several places throughout our region. Rafinesque's description reads as follows:—"Petioles unequal terete, leaves variable oblong cuspidate, or ovatoblong hardly sagittate or nearly auriculate or base often entire oblique, lobes unequal rounded short or ovate obtuse." . . . (Raf. New Fl. N. Am. 1: 88. 1836). So far as I know this form is always found with the type. The earliest leaves are similar in all the forms: the mature leaves in the type are large, 30 cm. or longer, palmately 3-ribbed, equilaterally triangular, nearly cucullate, i. e. the planes of the lobes form an obtuse and sometimes a right angle with the plane of the upper part of the leaf: in var. *heterophylla*, on the other hand, the mature leaves are barely 20 cm. in length and rarely 6 cm. in width, 1-ribbed, somewhat sagittate,

cordate, or unequally rounded at the base. The same proportions as to size obtain with respect to the spathe, spadix and head of fruit of the two forms. The seed of the two forms germinate in exactly the same manner. The germination has been described by Dr. Th. Holm (Mem. Torr. Bot. Club 2: 88, 1891.)

Peltandra virginica var. **angustifolia** (Raf.) comb. nov. *P. angustifolia* Raf.—“Leaves hastate cordate narrow oblong, lobes obtuse”.... (Raf. l. c. 89). What has been said in the case of var. *heterophylla* might be repeated of this form. In June, 1906, I observed in Nanjemoy Creek, Md., some plants growing with *P. virginica* which approach nearly the concept of *P. angustifolia*. The leaves are mostly rounded at the base, but occasionally halberd-shaped; the blades are 2.5–3 dm. in length and barely 4 cm. wide. So far as external characters are concerned this form appears to be farther removed from the type than var. *heterophylla*.

Type specimens have been deposited at the Gray Herbarium.

BUREAU OF PLANT INDUSTRY,

U. S. Department of Agriculture, Washington, D. C.

EXPLANATION OF PLATE 83.

Fig. 1. Typical leaf of *Peltandra virginica*.

Figs. 2 & 3. “ leaves of *P. virginica* var. *heterophylla*.

Fig. 4. “ leaf of *P. virginica* var. *angustifolia*.

(For these drawings thanks are due to Mrs. Agnes Chase.)

THE NORTH AMERICAN VARIATIONS OF LYCOPODIUM CLAVATUM.

M. L. FERNALD and C. H. BISSELL.

IN 1831 Greville & Hooker described from the Canadian Rocky Mountains a 1-spiked variety of *Lycopodium clavatum* as

“Var. β . *monostachyon*; spica solitaria, pedunculis brevibus” from “The Rocky Mountains, north of the Smoking River, in lat. 56°. North America. Mr. Drummond.—The variety β . is a remarkable one. The whole plant is more compact, the leaves less dentato-ciliate,